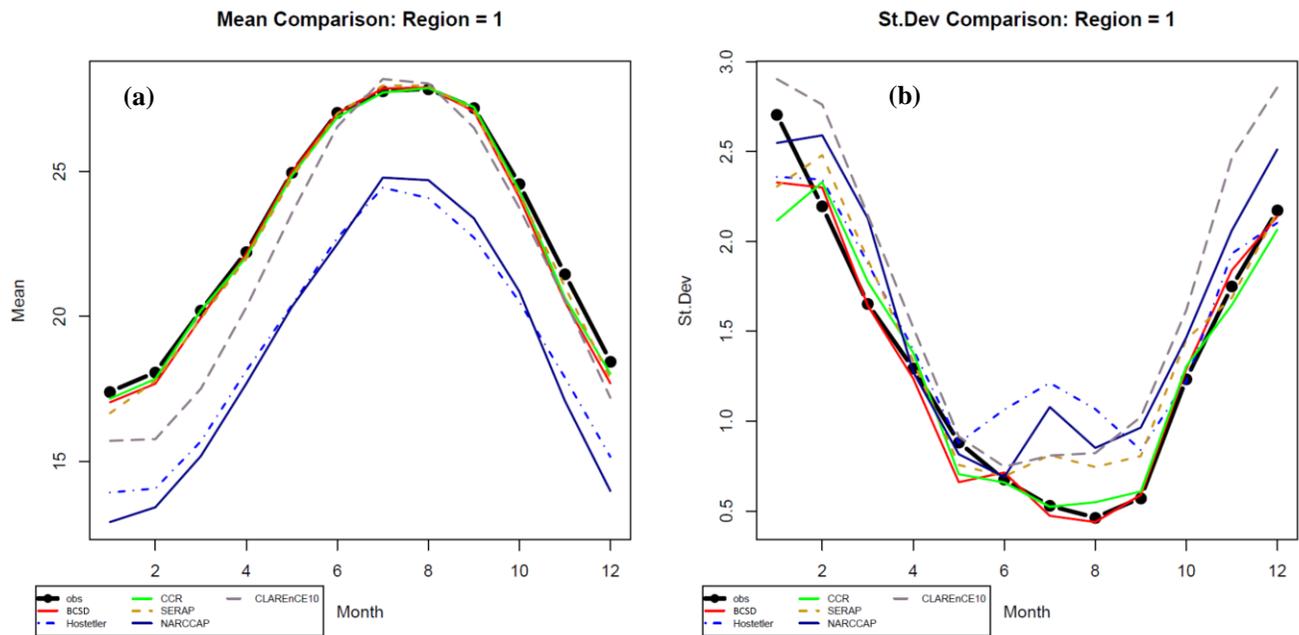


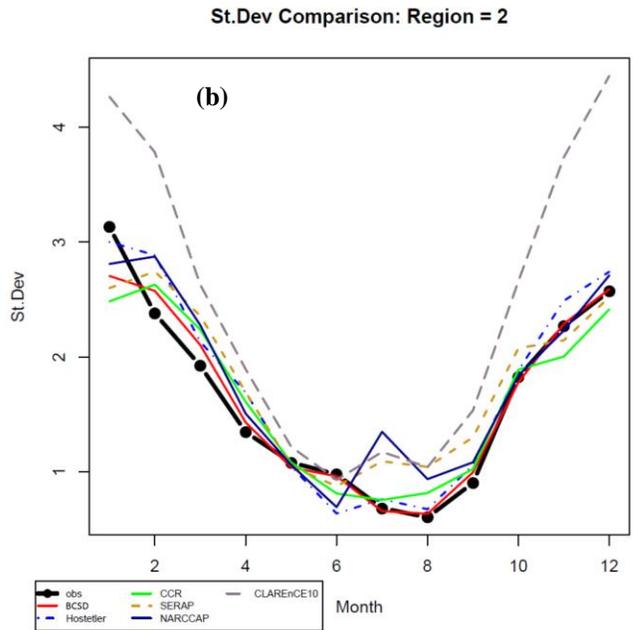
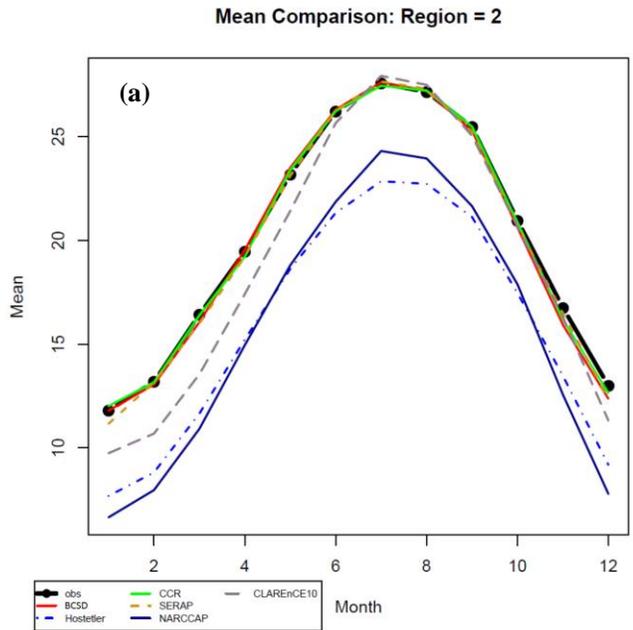
Appendix 3 – Annual Cycles for All Subregions

In previous chapters of this report, we have discussed the annual cycles were discussed for the mean and standard deviation of monthly temperature and precipitation for several subregions in the Southeast U.S. In this appendix, all the annual cycles for monthly temperature and precipitation are included for each sub-region. In addition, the root mean square error (RMSE) and correlation for each variable are also included in tables following each group of figures.

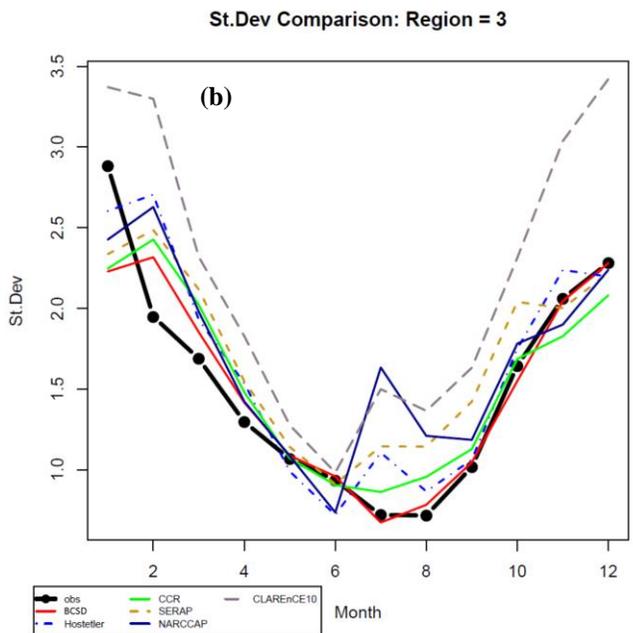
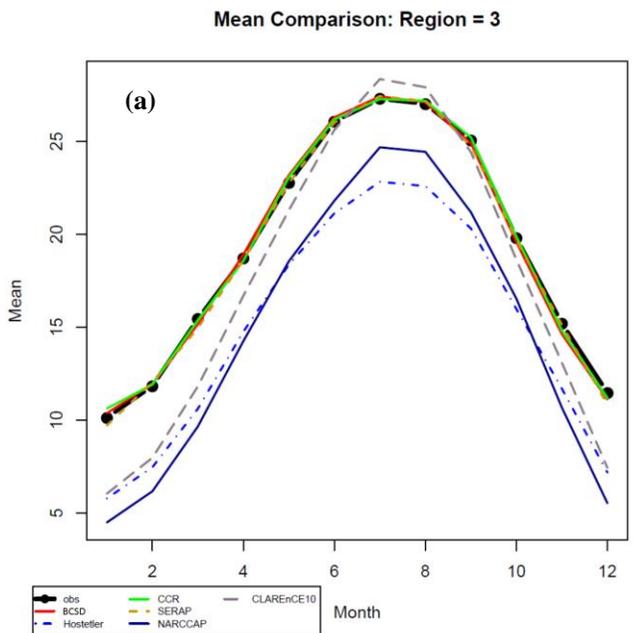
Average and Standard Deviation Monthly Temperature



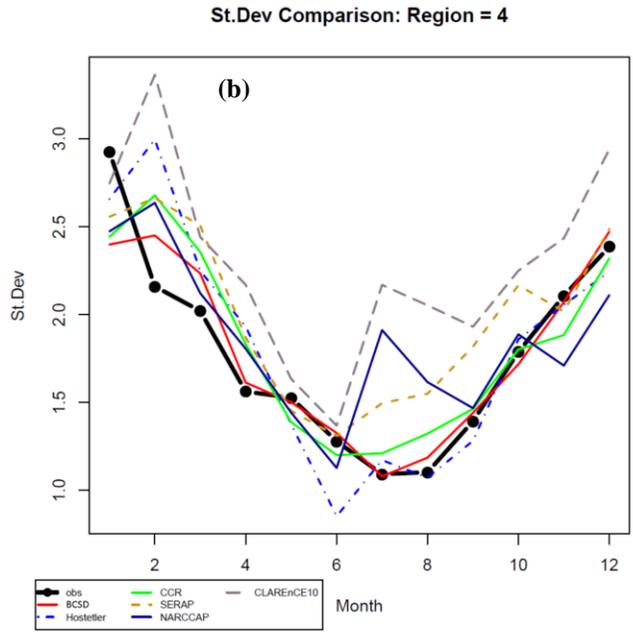
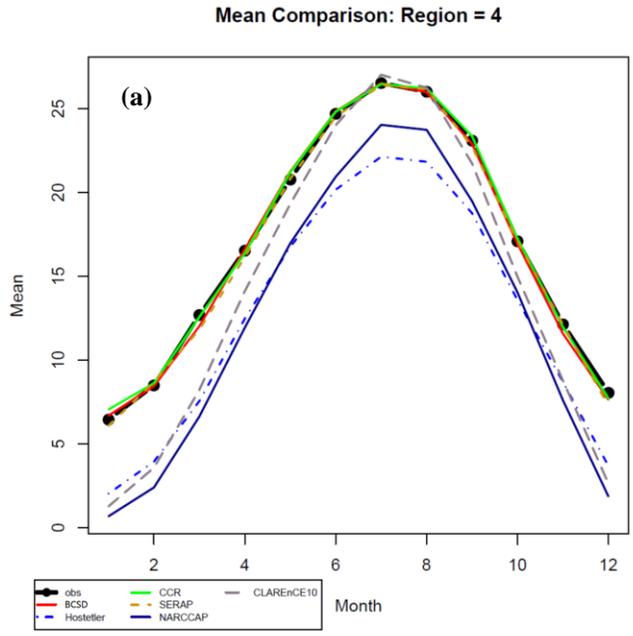
Annual Cycle for the (a) mean and (b) standard deviation of monthly temperature (°C) for Region 1 – Southern Florida.



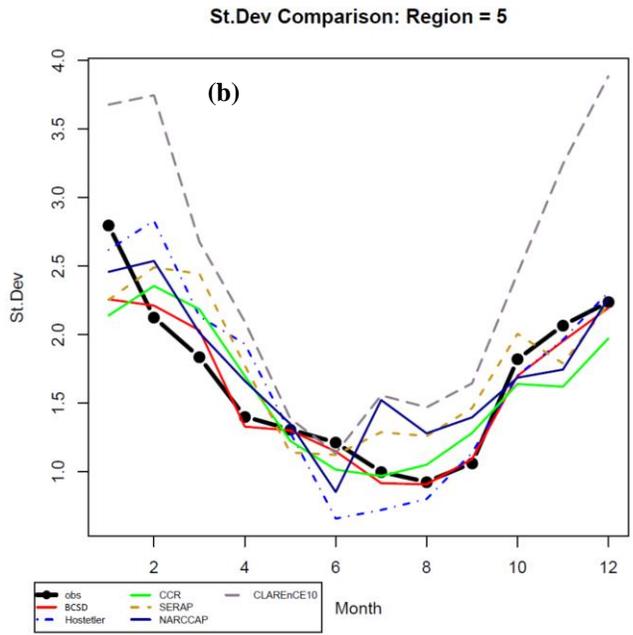
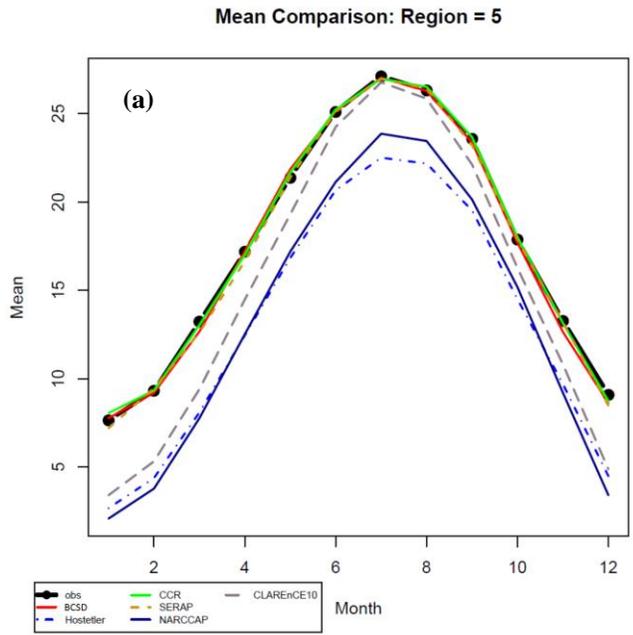
Annual Cycle for the (a) mean and (b) standard deviation of monthly temperature ($^{\circ}\text{C}$) for Region 2 – Northeast Florida / Georgia Coast.



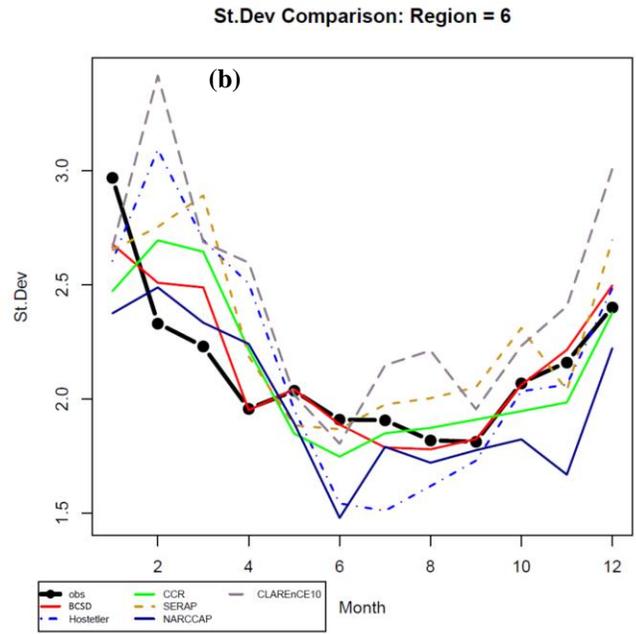
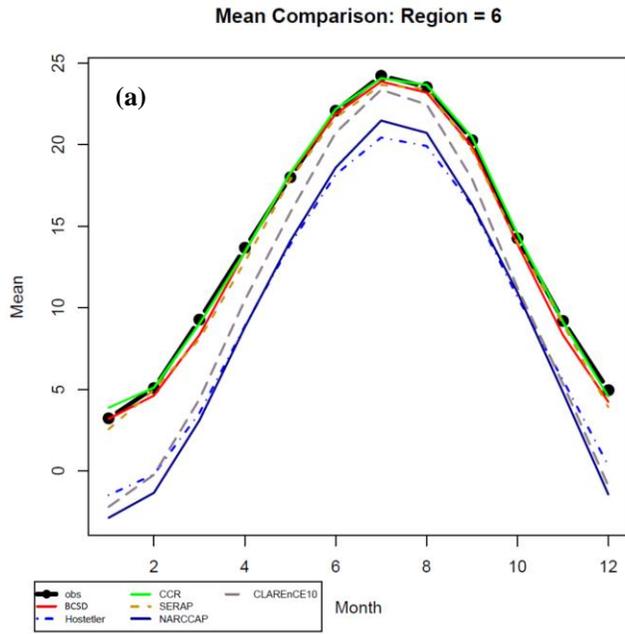
Annual Cycle for the (a) mean and (b) standard deviation of monthly temperature ($^{\circ}\text{C}$) for Region 3 – Northern Gulf Coast of Florida.



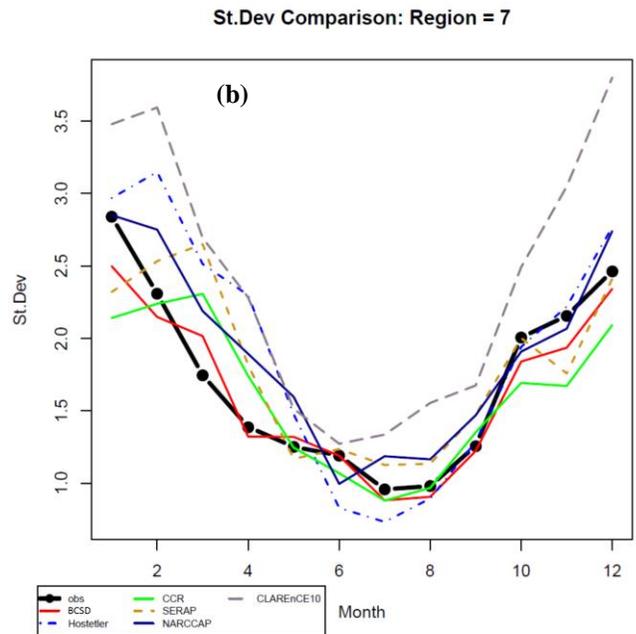
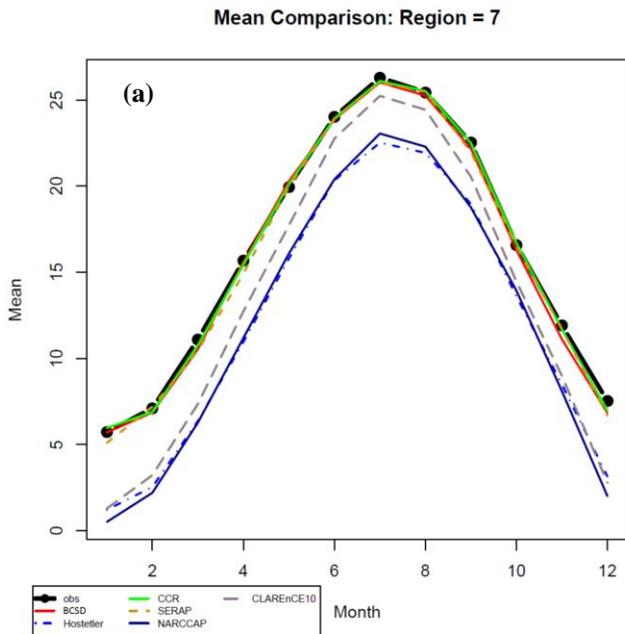
Annual Cycle for the (a) mean and (b) standard deviation of monthly temperature ($^{\circ}\text{C}$) for Region 4 – Alabama / Western Georgia.



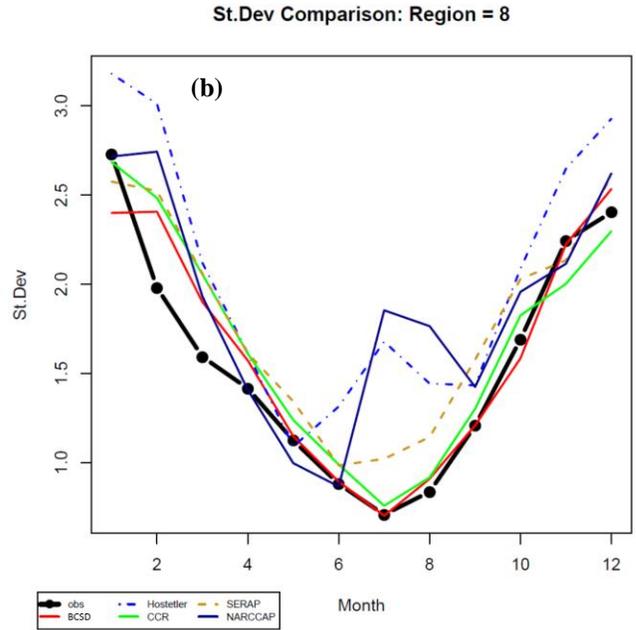
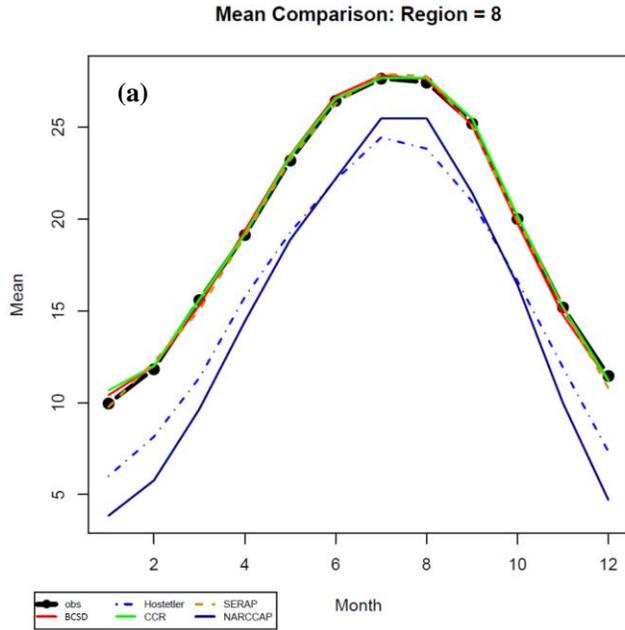
Annual Cycle for the (a) mean and (b) standard deviation of monthly temperature ($^{\circ}\text{C}$) for Region 5 – South Carolina.



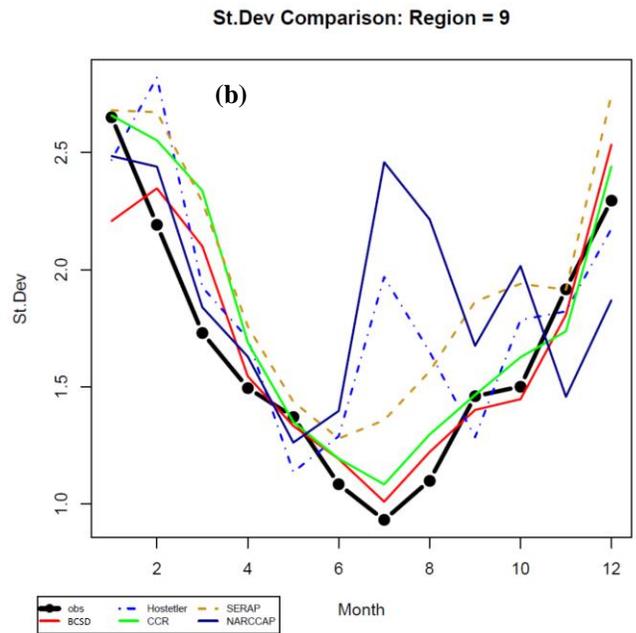
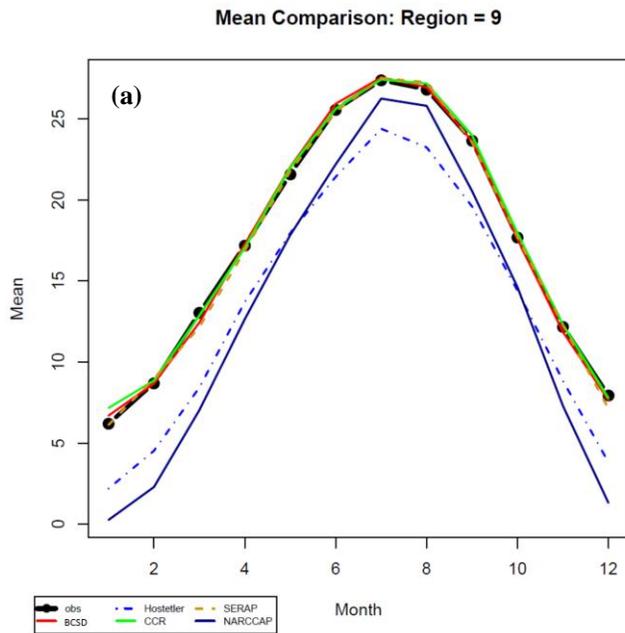
Annual Cycle for the (a) mean and (b) standard deviation of monthly temperature ($^{\circ}\text{C}$) for Region 6 – Southern Appalachians.



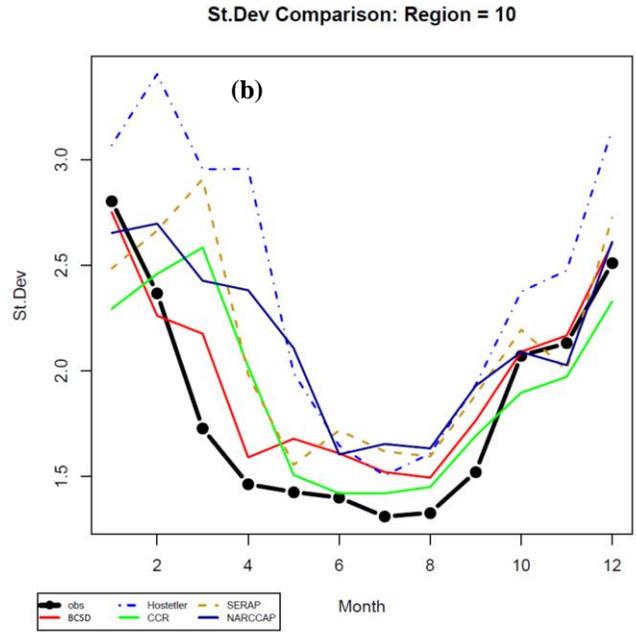
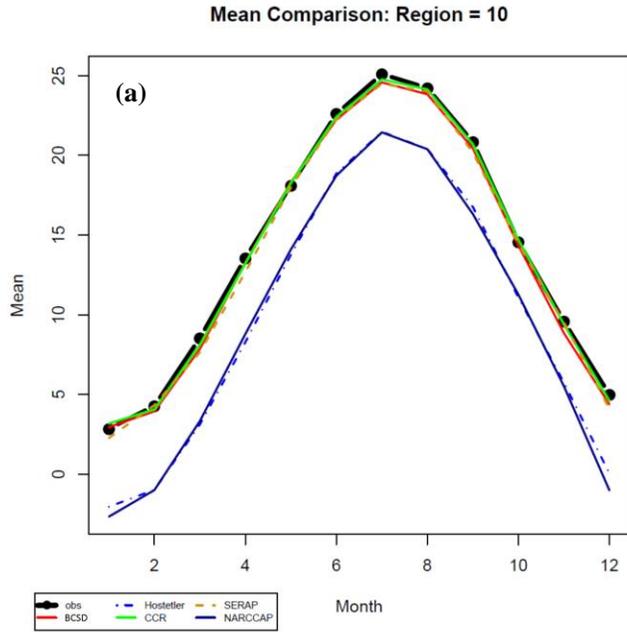
Annual Cycle for the (a) mean and (b) standard deviation of monthly temperature ($^{\circ}\text{C}$) for Region 7 – Eastern North Carolina.



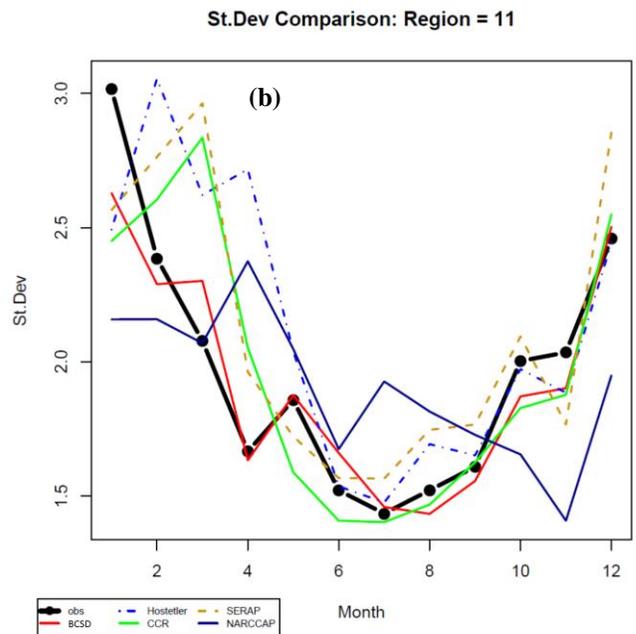
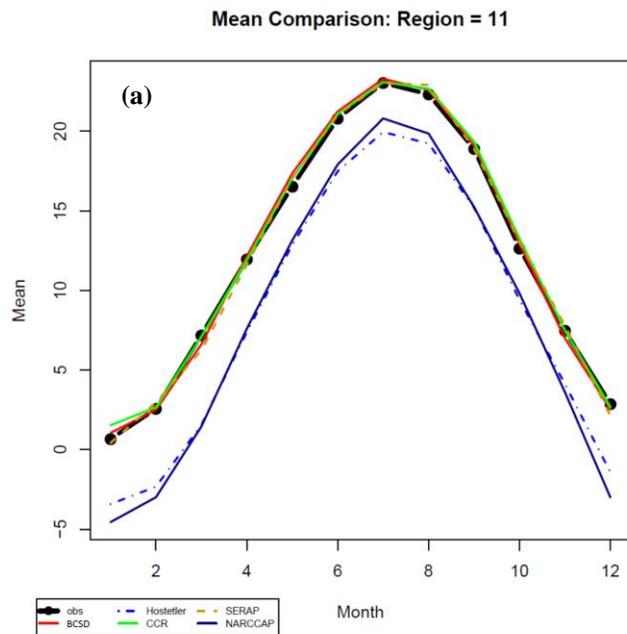
Annual Cycle for the (a) mean and (b) standard deviation of monthly temperature ($^{\circ}\text{C}$) for Region 8 – Louisiana / Mississippi Coast.



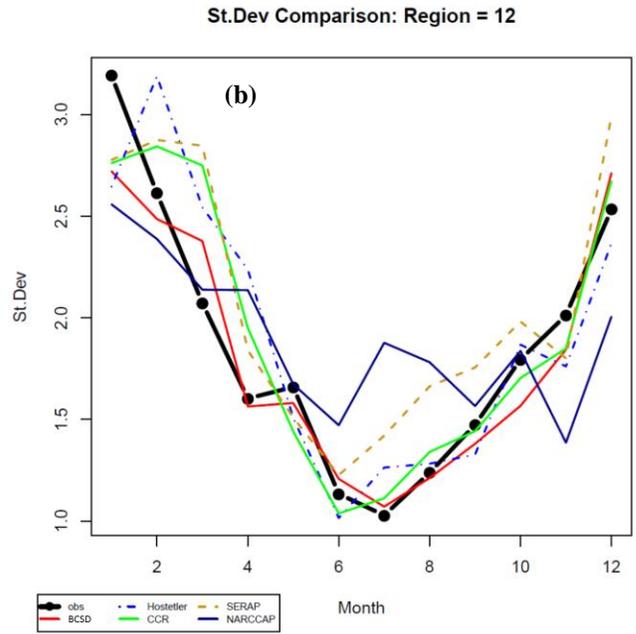
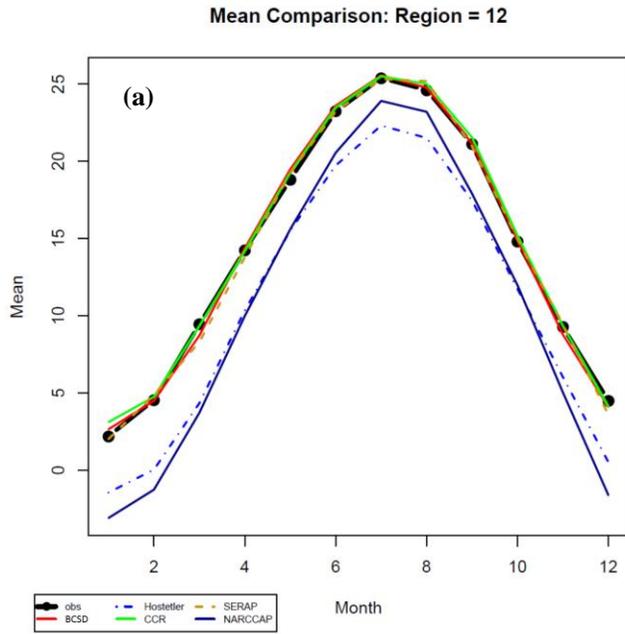
Annual Cycle for the (a) mean and (b) standard deviation of monthly temperature ($^{\circ}\text{C}$) for Region 9 – Northern Louisiana / Southern Arkansas.



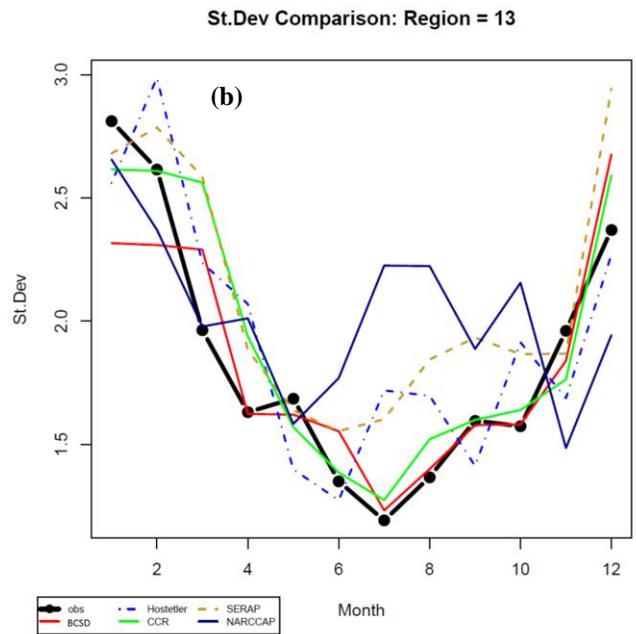
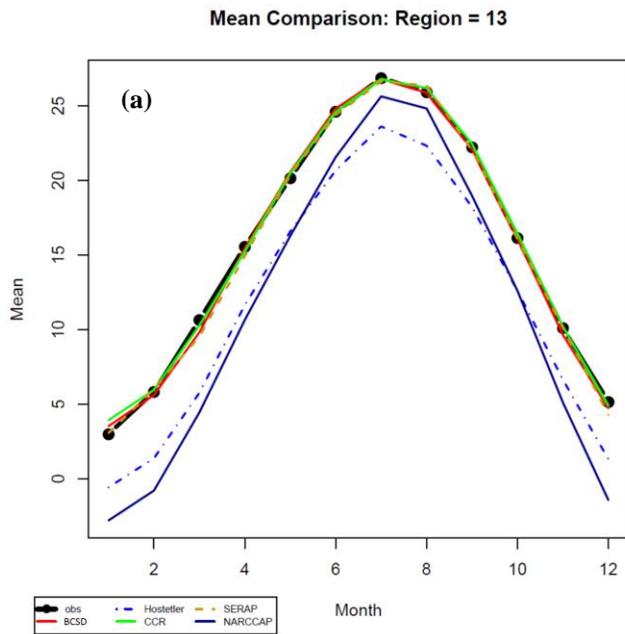
Annual Cycle for the (a) mean and (b) standard deviation of monthly temperature ($^{\circ}\text{C}$) for Region 10 – Southeast Virginia.



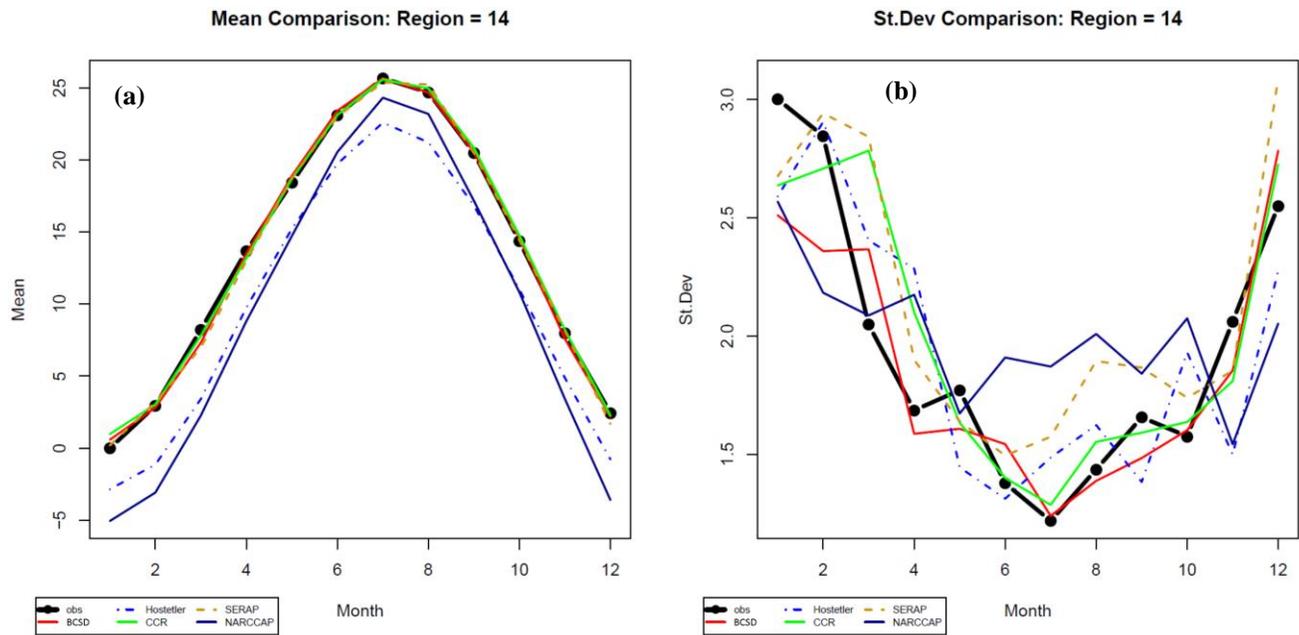
Annual Cycle for the (a) mean and (b) standard deviation of monthly temperature ($^{\circ}\text{C}$) for Region 11 – Western Virginia / Eastern Kentucky.



Annual Cycle for the (a) mean and (b) standard deviation of monthly temperature ($^{\circ}\text{C}$) for Region 12 – Western Kentucky / Tennessee.



Annual Cycle for the (a) mean and (b) standard deviation of monthly temperature ($^{\circ}\text{C}$) for Region 13 – Northern Arkansas.



Annual Cycle for the (a) mean and (b) standard deviation of monthly temperature (°C) for Region 14 – Southern Missouri.

RMSE (°C) for each Downscaled Dataset and Sub-region for Mean Monthly Temperature

	CCR	BCSD	SERAP	CLAREnCE10	Hostetler	NARCCAP
Region 1	0.301	0.415	0.358	1.441	3.973	4.232
Region 2	0.232	0.356	0.331	1.578	4.278	4.399
Region 3	0.234	0.293	0.297	2.514	4.363	4.551
Region 4	0.272	0.333	0.403	3.257	4.277	4.569
Region 5	0.217	0.328	0.347	2.738	4.459	4.410
Region 6	0.282	0.515	0.634	3.712	4.383	4.751
Region 7	0.245	0.408	0.466	2.971	4.044	4.183
Region 8	0.262	0.276	0.318	NA	3.800	4.805
Region 9	0.356	0.316	0.397	NA	3.814	4.544
Region 10	0.267	0.451	0.560	NA	4.450	4.577
Region 11	0.391	0.405	0.477	NA	3.988	4.201
Region 12	0.383	0.388	0.501	NA	3.726	4.166
Region 13	0.354	0.374	0.488	NA	3.862	4.641
Region 14	0.401	0.390	0.521	NA	3.550	4.343

Correlation between the mean monthly temperatures estimated by each downscaled dataset and the observed values for each Sub-region

	CCR	BCSD	SERAP	CLAREnCE10	Hostetler	NARCCAP
Region 1	0.999	0.998	0.999	0.992	0.993	0.995
Region 2	0.999	0.999	1.000	0.994	0.997	0.997
Region 3	0.999	0.999	0.999	0.998	0.998	0.997
Region 4	0.999	0.999	0.999	0.999	0.998	0.997
Region 5	1.000	0.999	0.999	0.999	0.997	0.997
Region 6	0.999	0.999	0.999	0.999	0.998	0.998
Region 7	1.000	0.999	0.999	0.999	0.998	0.998
Region 8	0.999	0.999	0.999	NA	0.998	0.997
Region 9	0.999	0.999	0.999	NA	0.999	0.997
Region 10	1.000	0.999	0.999	NA	0.998	0.998
Region 11	0.999	0.999	0.999	NA	0.997	0.998
Region 12	0.999	0.999	0.999	NA	0.998	0.998
Region 13	0.999	0.999	0.999	NA	0.999	0.998
Region 14	0.999	0.999	0.998	NA	0.998	0.998

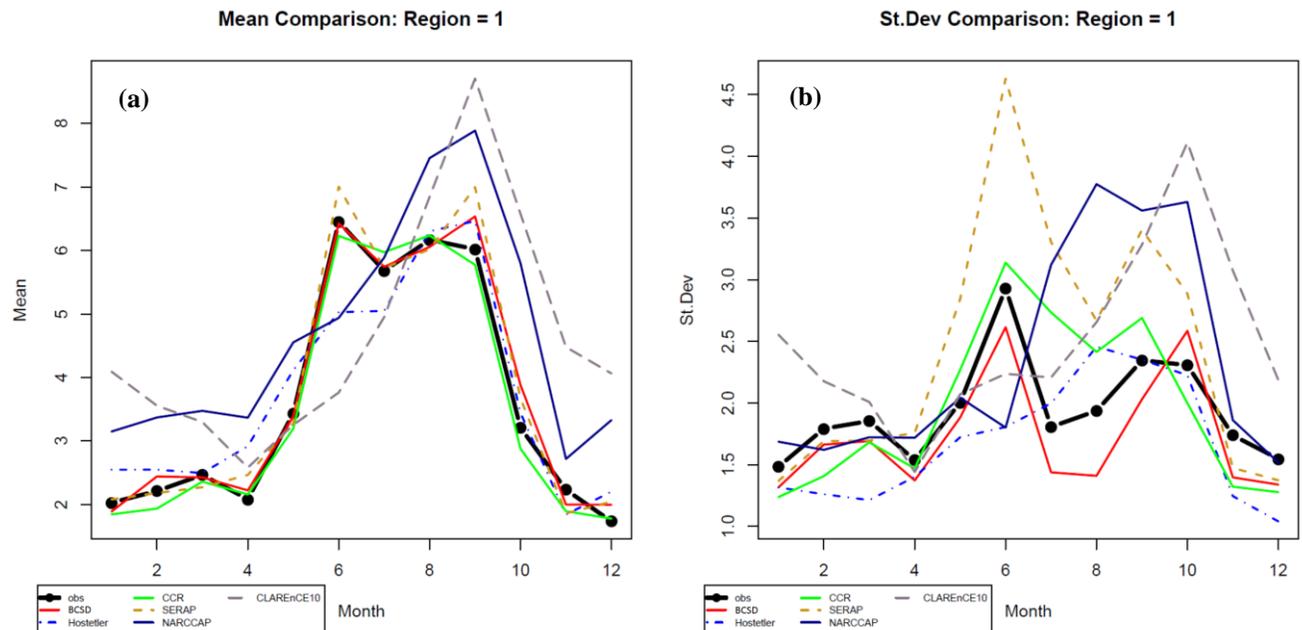
RMSE (°C) for each Downscaled Dataset and Sub-region for the standard deviation of monthly temperatures

	CCR	BCSD	SERAP	CLAREnCE10	Hostetler	NARCCAP
Region 1	0.195	0.137	0.221	0.428	0.329	0.327
Region 2	0.265	0.152	0.333	0.968	0.236	0.314
Region 3	0.284	0.228	0.357	0.757	0.294	0.404
Region 4	0.264	0.191	0.345	0.647	0.318	0.378
Region 5	0.304	0.179	0.347	0.914	0.333	0.309
Region 6	0.249	0.133	0.295	0.464	0.364	0.294
Region 7	0.346	0.166	0.364	0.779	0.454	0.292
Region 8	0.230	0.192	0.307	NA	0.557	0.505
Region 9	0.238	0.198	0.366	NA	0.421	0.613
Region 10	0.350	0.200	0.443	NA	0.717	0.445
Region 11	0.322	0.153	0.362	NA	0.429	0.454
Region 12	0.281	0.198	0.369	NA	0.350	0.461
Region 13	0.229	0.224	0.350	NA	0.313	0.504
Region 14	0.290	0.254	0.361	NA	0.350	0.476

Correlation between the standard deviation of monthly temperatures estimated by each downscaled dataset and the observed values for each Sub-region

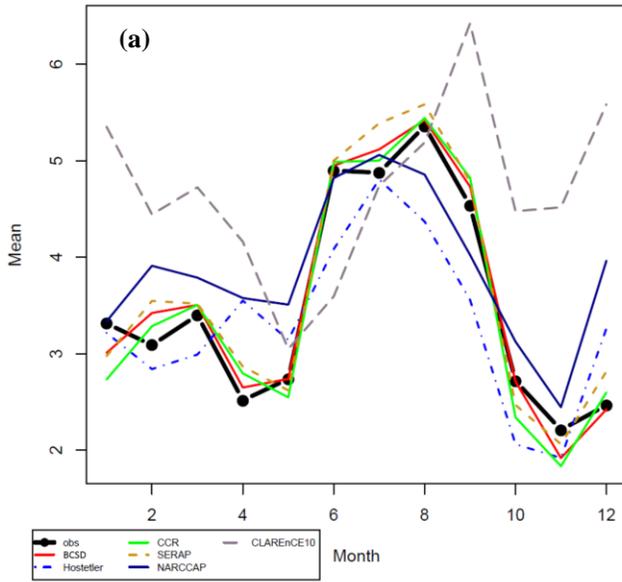
	CCR	BCSD	SERAP	CLARENCE10	Hostetler	NARCCAP
Region 1	0.966	0.983	0.962	0.972	0.945	0.951
Region 2	0.945	0.982	0.931	0.966	0.971	0.934
Region 3	0.905	0.938	0.888	0.929	0.917	0.824
Region 4	0.876	0.935	0.861	0.723	0.870	0.725
Region 5	0.847	0.956	0.818	0.922	0.892	0.847
Region 6	0.693	0.909	0.707	0.607	0.678	0.675
Region 7	0.836	0.974	0.818	0.944	0.886	0.933
Region 8	0.948	0.958	0.949	NA	0.912	0.781
Region 9	0.935	0.924	0.931	NA	0.709	0.275
Region 10	0.734	0.966	0.737	NA	0.765	0.772
Region 11	0.770	0.948	0.766	NA	0.656	0.291
Region 12	0.907	0.953	0.872	NA	0.854	0.697
Region 13	0.907	0.892	0.880	NA	0.815	0.394
Region 14	0.868	0.901	0.849	NA	0.792	0.544

Average and Standard Deviation Monthly Precipitation

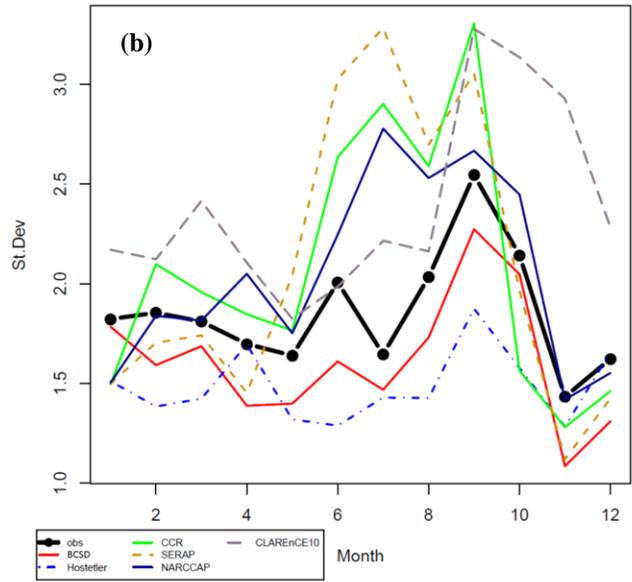


Annual Cycle for the (a) mean and (b) standard deviation of monthly precipitation (mm/day) for Region 1 – Southern Florida.

Mean Comparison: Region = 2

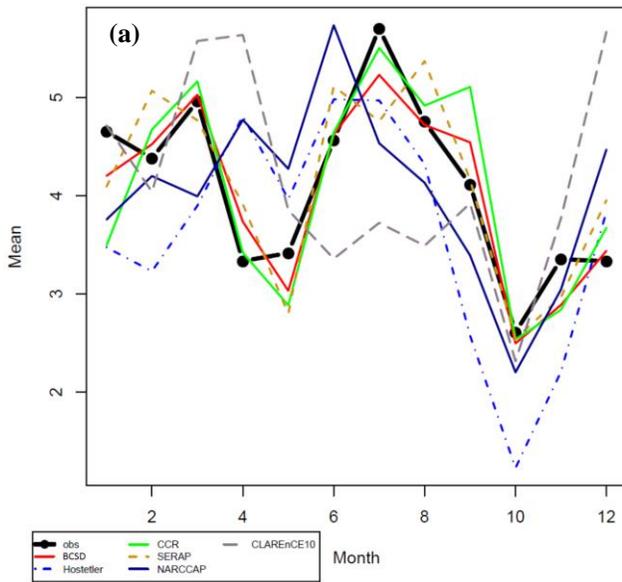


St.Dev Comparison: Region = 2

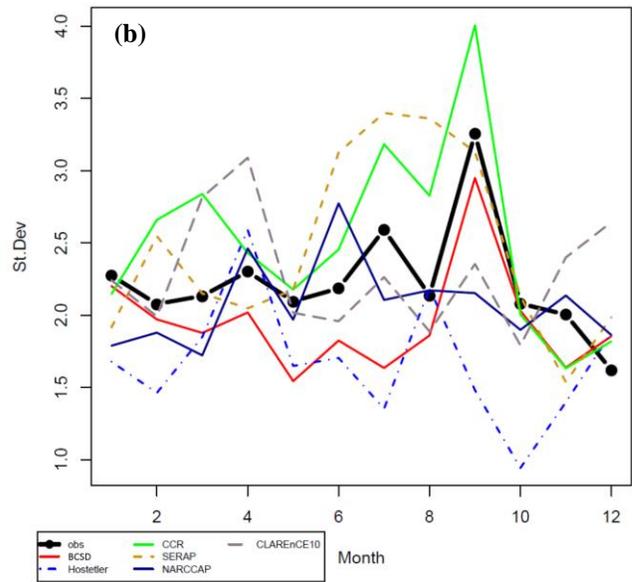


Annual Cycle for the (a) mean and (b) standard deviation of monthly precipitation (mm/day) for Region 2 – Northeast Florida / Georgia Coast.

Mean Comparison: Region = 3

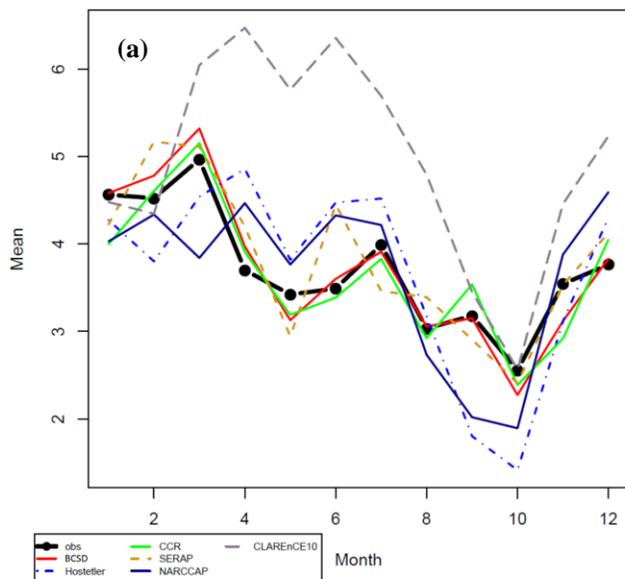


St.Dev Comparison: Region = 3

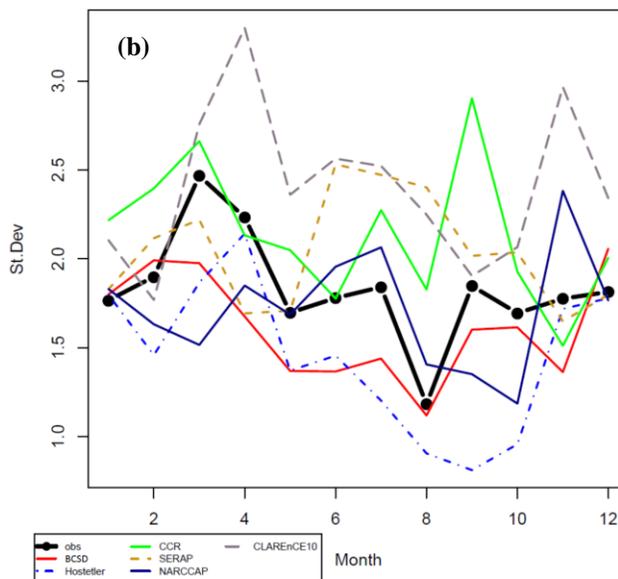


Annual Cycle for the (a) mean and (b) standard deviation of monthly precipitation (mm/day) for Region 3 – Northern Gulf Coast of Florida.

Mean Comparison: Region = 4

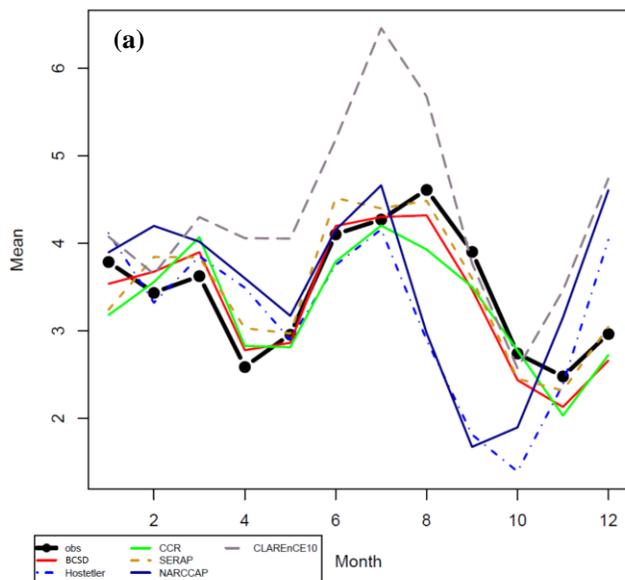


St.Dev Comparison: Region = 4

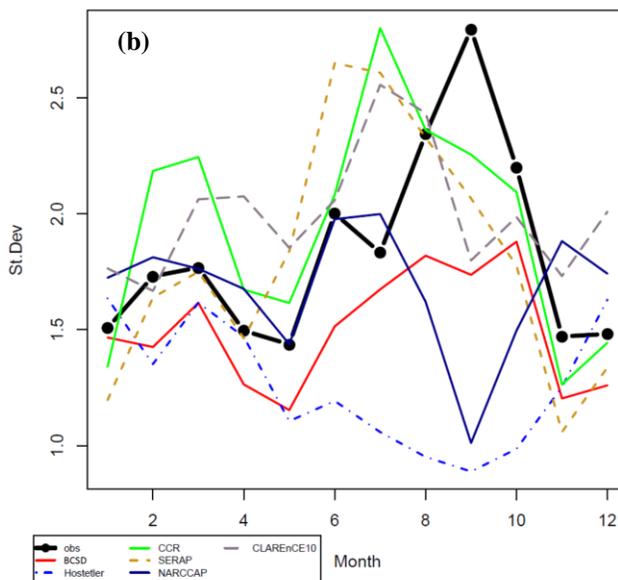


Annual Cycle for the (a) mean and (b) standard deviation of monthly precipitation (mm/day) for Region 4 – Alabama / Western Georgia.

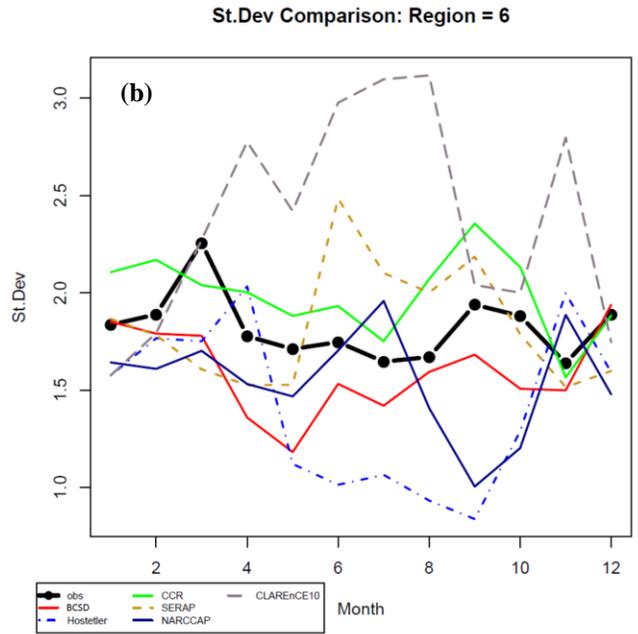
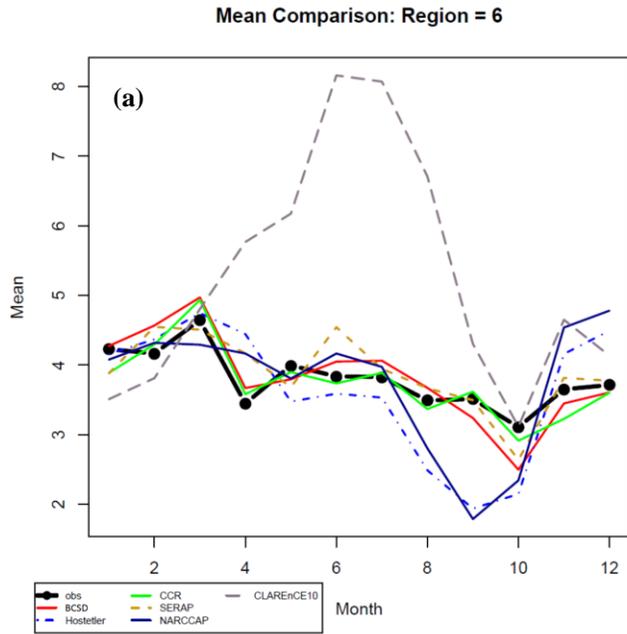
Mean Comparison: Region = 5



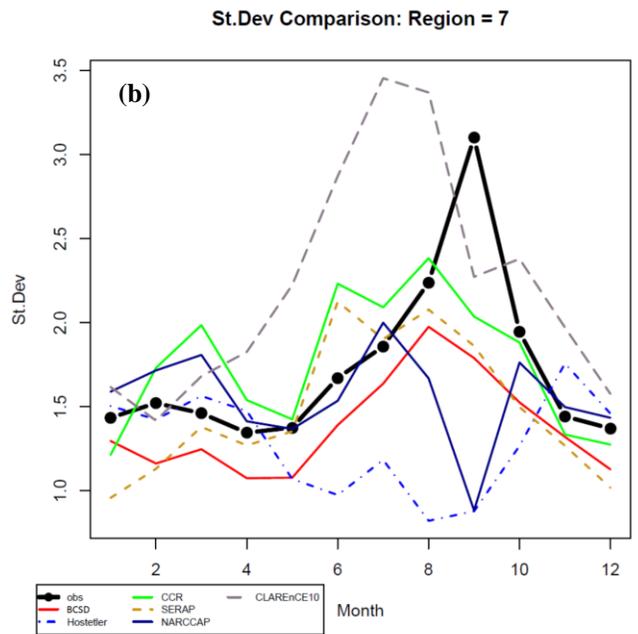
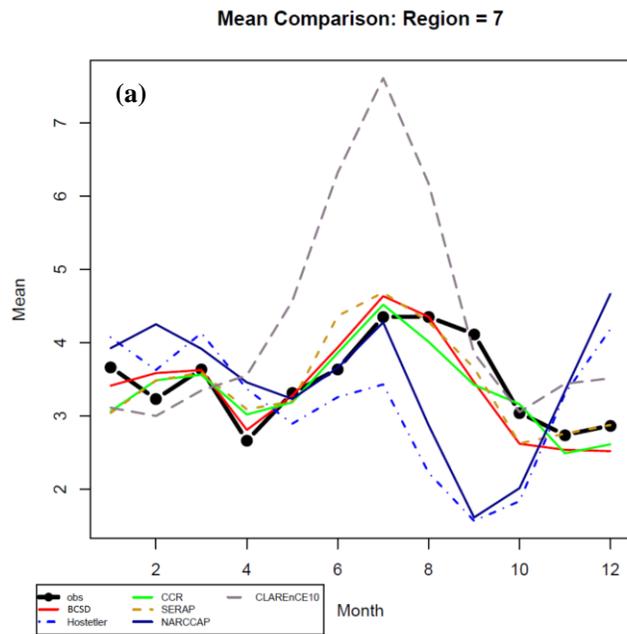
St.Dev Comparison: Region = 5



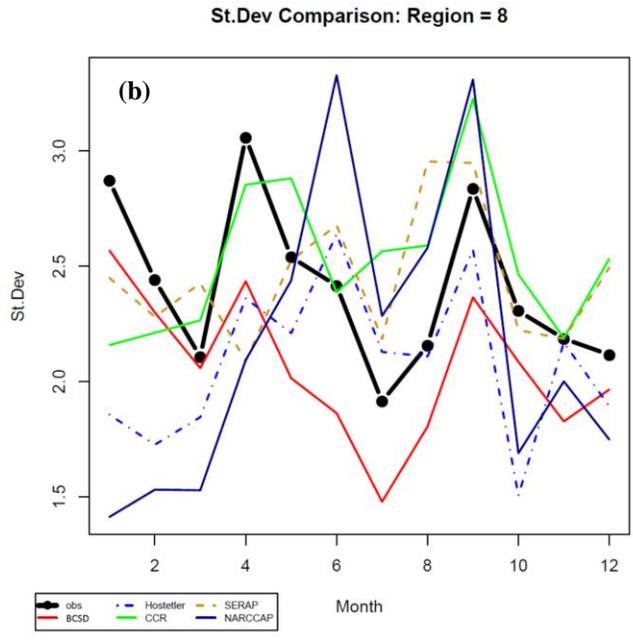
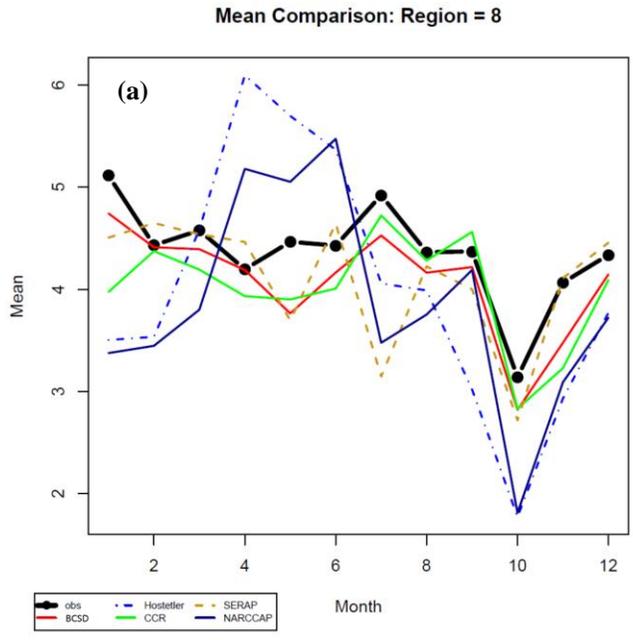
Annual Cycle for the (a) mean and (b) standard deviation of monthly precipitation (mm/day) for Region 5 – South Carolina.



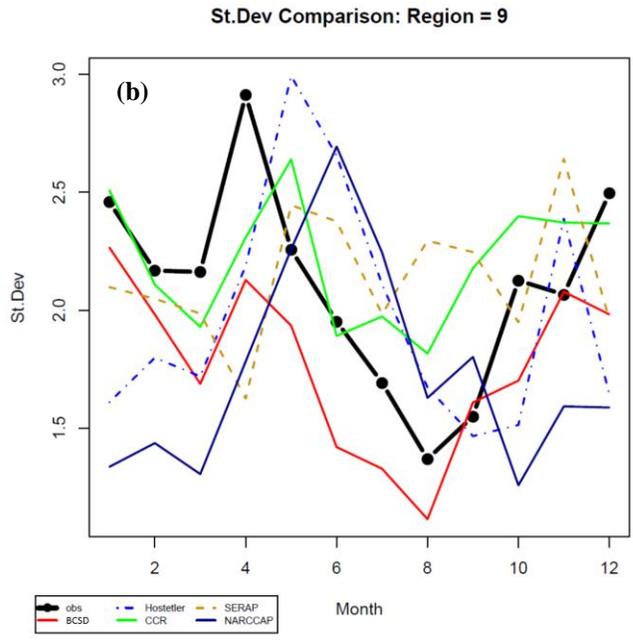
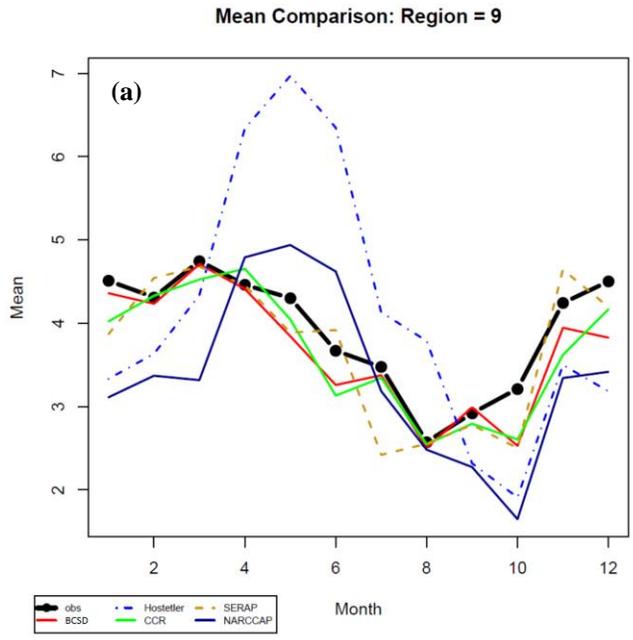
Annual Cycle for the (a) mean and (b) standard deviation of monthly precipitation (mm/day) for Region 6 – Southern Appalachians.



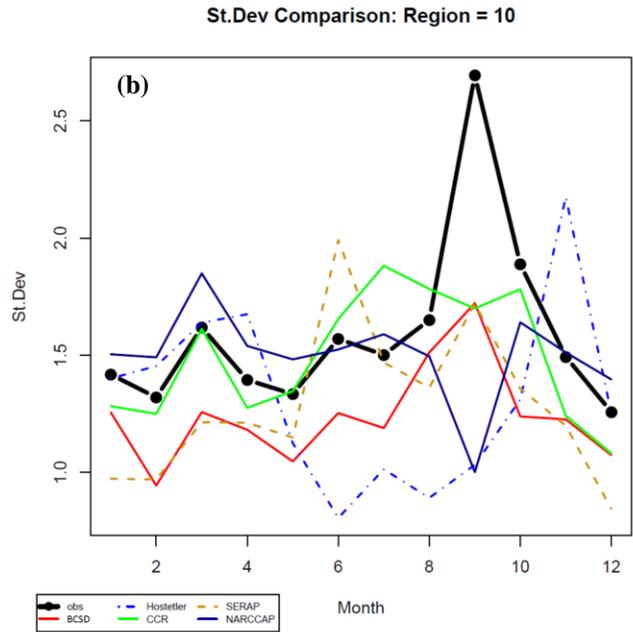
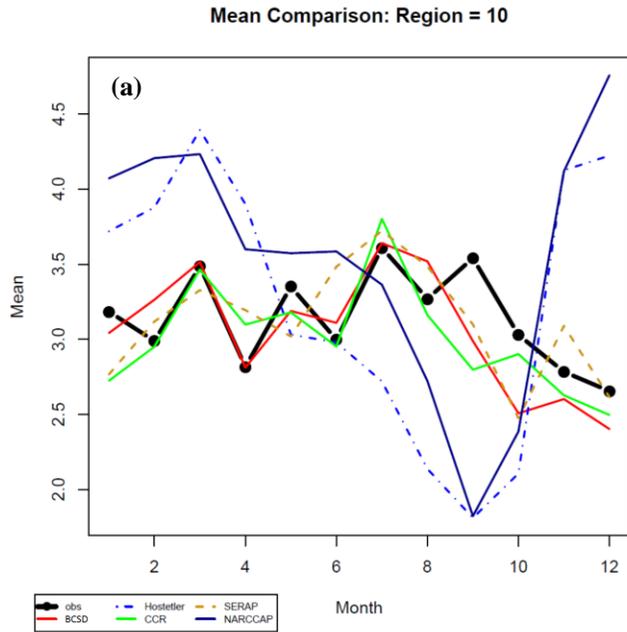
Annual Cycle for the (a) mean and (b) standard deviation of monthly precipitation (mm/day) for Region 7 – Eastern North Carolina.



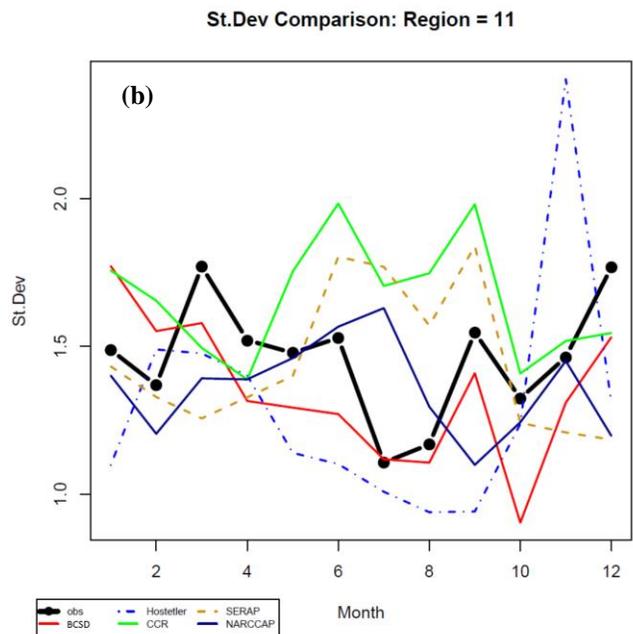
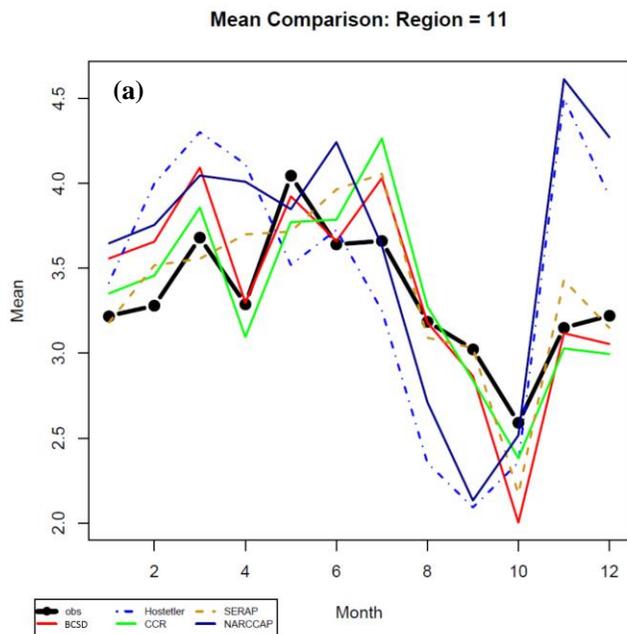
Annual Cycle for the (a) mean and (b) standard deviation of monthly precipitation (mm/day) for Region 8 – Louisiana / Mississippi Coast.



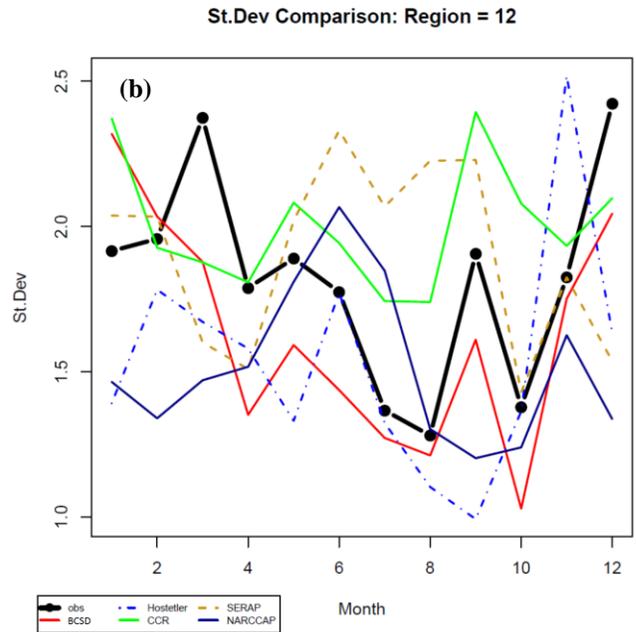
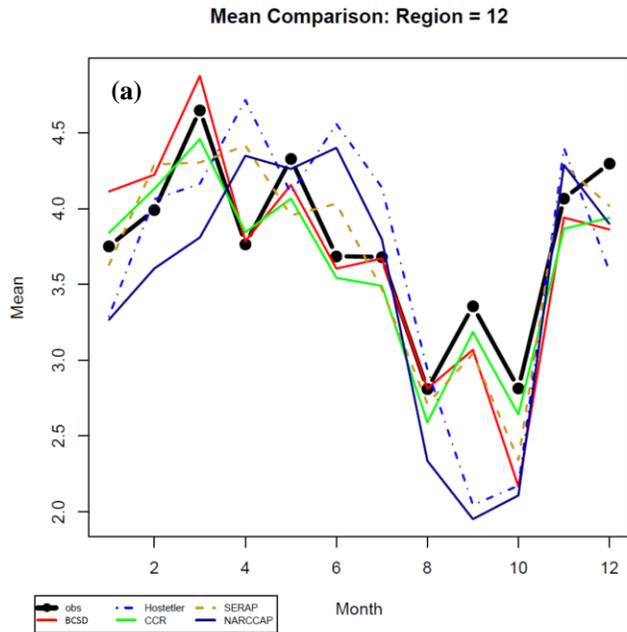
Annual Cycle for the (a) mean and (b) standard deviation of monthly precipitation (mm/day) for Region 9 – Northern Louisiana / Southern Arkansas.



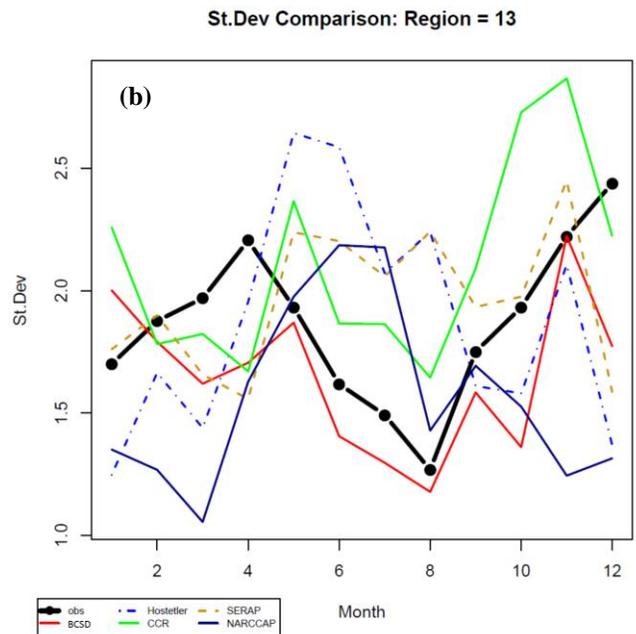
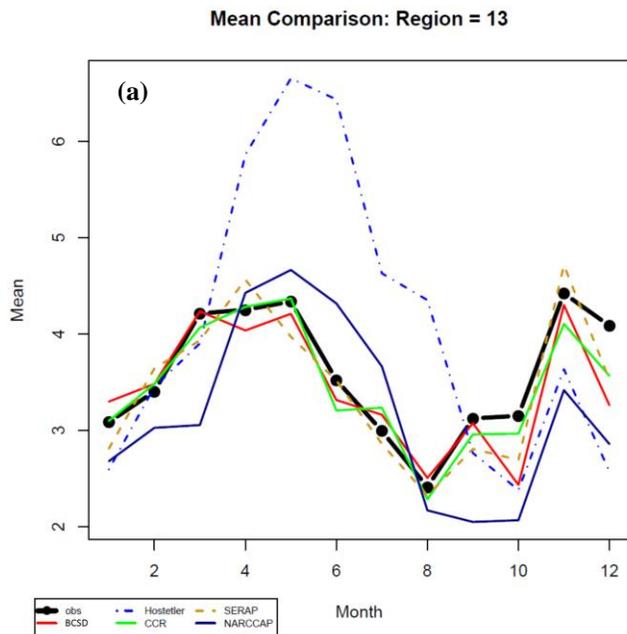
Annual Cycle for the (a) mean and (b) standard deviation of monthly precipitation (mm/day) for Region 10 – Southeast Virginia.



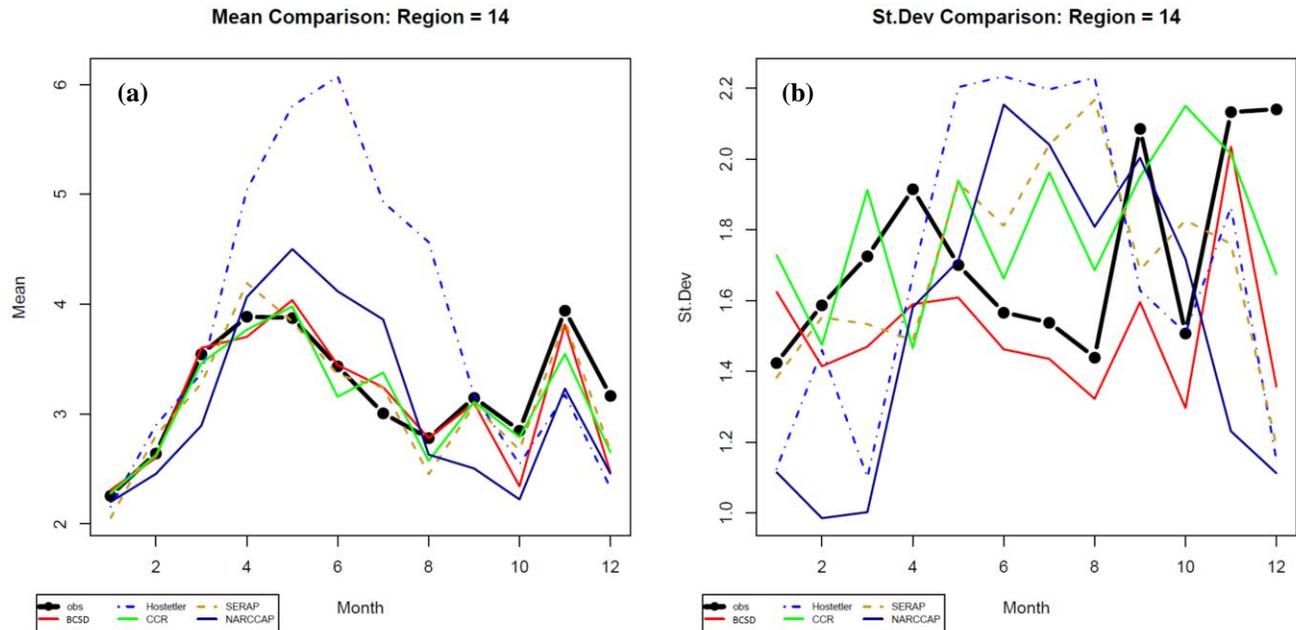
Annual Cycle for the (a) mean and (b) standard deviation of monthly precipitation (mm/day) for Region 11 – Western Virginia / Eastern Kentucky.



Annual Cycle for the (a) mean and (b) standard deviation of monthly precipitation (mm/day) for Region 12 – Western Kentucky /Tennessee.



Annual Cycle for the (a) mean and (b) standard deviation of monthly precipitation (mm/day) for Region 13 –Northern Arkansas.



Annual Cycle for the (a) mean and (b) standard deviation of monthly precipitation (mm/day) for Region 14 –Southern Missouri.

RMSE (mm/day) for each Downscaled Dataset and Sub-region for Mean Monthly Precipitation

	CCR	BCSD	SERAP	CLAREnCE10	Hostetler	NARCCAP
Region 1	0.226	0.282	0.403	1.921	0.620	1.399
Region 2	0.277	0.188	0.298	1.685	0.660	0.681
Region 3	0.517	0.315	0.553	1.250	1.045	0.903
Region 4	0.308	0.230	0.464	1.623	0.776	0.690
Region 5	0.371	0.263	0.305	1.126	0.977	1.061
Region 6	0.207	0.287	0.376	2.229	0.749	0.753
Region 7	0.341	0.310	0.375	1.440	1.182	1.116
Region 8	0.496	0.346	0.621	NA	1.140	1.024
Region 9	0.364	0.347	0.465	NA	1.474	0.969
Region 10	0.287	0.270	0.337	NA	1.055	1.071
Region 11	0.246	0.286	0.271	NA	0.707	0.691
Region 12	0.198	0.285	0.343	NA	0.655	0.636
Region 13	0.230	0.342	0.313	NA	1.496	0.805
Region 14	0.244	0.272	0.242	NA	1.304	0.572

Correlation between the mean monthly precipitation estimated by each downscaled dataset and the observed values for each Sub-region

	CCR	BCSD	SERAP	CLAREnCE10	Hostetler	NARCCAP
Region 1	0.995	0.990	0.984	0.577	0.943	0.848
Region 2	0.976	0.989	0.976	0.226	0.805	0.853
Region 3	0.856	0.935	0.806	0.093	0.579	0.446
Region 4	0.913	0.975	0.838	0.428	0.685	0.647
Region 5	0.876	0.943	0.908	0.714	0.301	0.156
Region 6	0.924	0.928	0.705	0.003	0.648	0.548
Region 7	0.832	0.892	0.816	0.667	-0.289	-0.162
Region 8	0.754	0.916	0.461	NA	0.410	0.397
Region 9	0.937	0.938	0.876	NA	0.342	0.565
Region 10	0.696	0.761	0.479	NA	-0.486	-0.476
Region 11	0.883	0.903	0.842	NA	0.436	0.515
Region 12	0.964	0.927	0.858	NA	0.652	0.745
Region 13	0.949	0.874	0.925	NA	0.299	0.604
Region 14	0.906	0.899	0.932	NA	0.509	0.711

RMSE (mm/day) for each Downscaled Dataset and Sub-region for the standard deviation of Monthly Precipitation

	CCR	BCSD	SERAP	CLAREnCE10	Hostetler	NARCCAP
Region 1	0.398	0.283	0.818	0.857	0.491	0.901
Region 2	0.538	0.262	0.642	0.664	0.438	0.402
Region 3	0.458	0.395	0.565	0.534	0.803	0.447
Region 4	0.457	0.330	0.502	0.698	0.490	0.422
Region 5	0.389	0.422	0.427	0.464	0.849	0.616
Region 6	0.246	0.292	0.361	0.850	0.574	0.436
Region 7	0.404	0.459	0.458	0.791	0.846	0.677
Region 8	0.377	0.389	0.427	NA	0.505	0.716
Region 9	0.345	0.403	0.586	NA	0.583	0.741
Region 10	0.330	0.420	0.438	NA	0.652	0.509
Region 11	0.350	0.218	0.352	NA	0.418	0.291
Region 12	0.379	0.314	0.525	NA	0.510	0.542
Region 13	0.445	0.337	0.503	NA	0.620	0.637
Region 14	0.331	0.316	0.449	NA	0.546	0.559

Correlation between the standard deviation of monthly precipitation estimated by each downscaled dataset and the observed values for each Sub-region

	CCR	BCSD	SERAP	CLAREnCE10	Hostetler	NARCCAP
Region 1	0.799	0.907	0.889	0.360	0.567	0.351
Region 2	0.626	0.942	0.556	0.480	0.537	0.633
Region 3	0.857	0.706	0.534	0.017	-0.126	0.220
Region 4	0.501	0.637	-0.180	0.445	0.642	0.123
Region 5	0.626	0.821	0.574	0.209	-0.712	-0.570
Region 6	0.518	0.561	-0.163	-0.556	0.216	-0.261
Region 7	0.599	0.832	0.634	0.451	-0.691	-0.435
Region 8	0.394	0.860	0.058	NA	0.328	0.139
Region 9	0.595	0.829	-0.494	NA	0.159	-0.212
Region 10	0.556	0.854	0.591	NA	-0.260	-0.578
Region 11	-0.126	0.623	-0.379	NA	0.243	-0.258
Region 12	0.336	0.768	-0.300	NA	0.316	-0.100
Region 13	0.425	0.641	-0.404	NA	-0.316	-0.406
Region 14	0.056	0.496	-0.434	NA	-0.216	-0.184